



1.5SMC SERIES

Surface Mount Transient Voltage Suppressor



Voltage Range
6.8 to 200 Volts
1500 Watts Peak Power

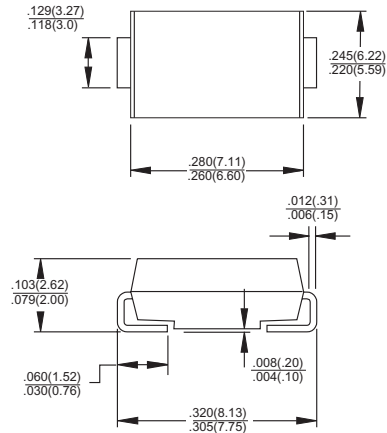
Features

- ✦ For surface mounted application in order to optimize board space
- ✦ Low profile package
- ✦ Built-in strain relief
- ✦ Glass passivated junction
- ✦ Excellent clamping capability
- ✦ Fast response time: Typically less than 1.0ps from 0 volt to BV min.
- ✦ Typical I_R less than $1 \mu A$ above 10V
- ✦ High temperature soldering guaranteed:
260°C / 10 seconds at terminals
- ✦ Plastic material used carries Underwriters Laboratory Flammability Classification 94V-0
- ✦ 1500 watts peak pulse power capability with a 10 X 1000 us waveform by 0.01% duty cycle

Mechanical Data

- ✦ Case: Molded plastic
- ✦ Terminals: Solder plated
- ✦ Polarity: Indicated by cathode band
- ✦ Standard packaging: 16mm tape (EIA STD RS-481)
- ✦ Weight: 0.21gram

SMC/DO-214AB



Dimensions in inches and (millimeters)

Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

| Type Number | Symbol | Value | Units |
|--|-----------------|--------------|--------------|
| Peak Power Dissipation at $T_A=25^\circ C$, $T_p=1ms$ (Note 1) | P_{PK} | Minimum 1500 | Watts |
| Power Dissipation on Infinite Heatsink, $T_A=50^\circ C$ | $P_{M(AV)}$ | 6.5 | W |
| Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method) (Note 2, 3) - Unidirectional Only | I_{FSM} | 200 | Amps |
| Thermal Resistance Junction to Ambient Air (Note 4) | $R_{\theta JA}$ | 50 | $^\circ C/W$ |
| Thermal Resistance Junction to Leads | $R_{\theta JL}$ | 15 | $^\circ C/W$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to + 150 | $^\circ C$ |

Notes: 1. Non-repetitive Current Pulse Per Fig. 3 and Derated above $T_A=25^\circ C$ Per Fig. 2.

2. Mounted on $8.0mm^2$ (.013mm Thick) Copper Pads to Each Terminal.

3. 8.3ms Single Half Sine-wave or Equivalent Square Wave, Duty Cycle=4 Pulses Per Minute Maximum.

4. Mounted on $5.0mm^2$ (.013mm thick) land areas.

Devices for Bipolar Applications

1. For Bidirectional Use C or CA Suffix for Types 1.5SMC6.8 through Types 1.5SMC200A.

2. Electrical Characteristics Apply in Both Directions.

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

| GENERAL PART NUMBER | Device Marking Code | Breakdown Voltage | | Test Current @IT (mA) | Stand-Off Voltage VWM (Volts) | Maximum Reverse Leakage at Vwm Id (uA) | Maximum Peak Surge Current IPPM (Note 2)(Amps) | Maximum Clamping Voltage at IPPM Vc(volts) | Maximum Temperature Coefficient of VBR(% / °C) |
|---------------------|---------------------|-------------------|--------------|-----------------------|-------------------------------|--|--|--|--|
| | | VBR | | | | | | | |
| | | (Volts) Min | (Note 1) Max | | | | | | |
| 1.5SMC6.8 | DDJ | 6.12 | 7.48 | 10 | 5.50 | 1000 | 145 | 10.8 | 0.057 |
| 1.5SMC6.8A | DEJ | 6.45 | 7.14 | 10 | 5.80 | 1000 | 150 | 10.5 | 0.057 |
| 1.5SMC7.5 | DFJ | 6.75 | 8.25 | 10 | 6.05 | 500 | 134 | 11.7 | 0.061 |
| 1.5SMC7.5A | DGJ | 7.13 | 7.88 | 10 | 6.40 | 500 | 139 | 11.3 | 0.061 |
| 1.5SMC8.2 | DHJ | 7.38 | 9.02 | 10 | 6.63 | 200 | 126 | 12.5 | 0.065 |
| 1.5SMC8.2A | DKJ | 7.79 | 8.61 | 10 | 7.02 | 200 | 130 | 12.1 | 0.065 |
| 1.5SMC9.1 | DLJ | 8.19 | 10.0 | 1.0 | 7.37 | 50 | 114 | 13.8 | 0.068 |
| 1.5SMC9.1A | DMJ | 8.65 | 9.55 | 1.0 | 7.78 | 50 | 117 | 13.4 | 0.068 |
| 1.5SMC10 | DNJ | 9.00 | 11.0 | 1.0 | 8.10 | 10 | 105 | 15.0 | 0.073 |
| 1.5SMC10A | DPJ | 9.50 | 10.5 | 1.0 | 8.55 | 10 | 108 | 14.5 | 0.073 |
| 1.5SMC11 | DQJ | 9.90 | 12.1 | 1.0 | 8.92 | 5.0 | 97 | 16.2 | 0.075 |
| 1.5SMC11A | DRJ | 10.5 | 11.6 | 1.0 | 9.40 | 5.0 | 100 | 15.6 | 0.075 |
| 1.5SMC12 | DSJ | 10.8 | 13.2 | 1.0 | 9.72 | 5.0 | 91 | 17.3 | 0.078 |
| 1.5SMC12A | DTJ | 11.4 | 12.6 | 1.0 | 10.2 | 5.0 | 94 | 16.7 | 0.078 |
| 1.5SMC13 | DUJ | 11.7 | 14.3 | 1.0 | 10.5 | 5.0 | 82 | 19.0 | 0.081 |
| 1.5SMC13A | DVJ | 12.4 | 13.7 | 1.0 | 11.1 | 5.0 | 86 | 18.2 | 0.081 |
| 1.5SMC15 | DWJ | 13.5 | 16.5 | 1.0 | 12.1 | 5.0 | 71 | 22.0 | 0.084 |
| 1.5SMC15A | DXJ | 14.3 | 15.8 | 1.0 | 12.8 | 5.0 | 74 | 21.2 | 0.084 |
| 1.5SMC16 | DYJ | 14.4 | 17.6 | 1.0 | 12.9 | 5.0 | 67 | 23.5 | 0.086 |
| 1.5SMC16A | DZJ | 15.2 | 16.8 | 1.0 | 13.6 | 5.0 | 70 | 22.5 | 0.086 |
| 1.5SMC18 | EDJ | 16.2 | 19.8 | 1.0 | 14.5 | 5.0 | 59 | 26.5 | 0.088 |
| 1.5SMC18A | EEJ | 17.1 | 18.9 | 1.0 | 15.3 | 5.0 | 60 | 25.2 | 0.088 |
| 1.5SMC20 | EFJ | 18.0 | 22.0 | 1.0 | 16.2 | 5.0 | 54 | 29.1 | 0.090 |
| 1.5SMC20A | EGJ | 19.0 | 21.0 | 1.0 | 17.1 | 5.0 | 56 | 27.7 | 0.090 |
| 1.5SMC22 | EHJ | 19.8 | 24.2 | 1.0 | 17.8 | 5.0 | 49 | 31.9 | 0.092 |
| 1.5SMC22A | EKJ | 20.9 | 23.1 | 1.0 | 18.8 | 5.0 | 51 | 30.6 | 0.092 |
| 1.5SMC24 | ELJ | 21.6 | 26.4 | 1.0 | 19.4 | 5.0 | 45 | 34.7 | 0.094 |
| 1.5SMC24A | EMJ | 22.8 | 25.2 | 1.0 | 20.5 | 5.0 | 47 | 33.2 | 0.094 |
| 1.5SMC27 | ENJ | 24.3 | 29.7 | 1.0 | 21.8 | 5.0 | 40 | 39.1 | 0.096 |
| 1.5SMC27A | EPJ | 25.7 | 28.4 | 1.0 | 23.1 | 5.0 | 42 | 37.5 | 0.096 |
| 1.5SMC30 | EQJ | 27.0 | 33.0 | 1.0 | 24.3 | 5.0 | 36 | 43.5 | 0.097 |
| 1.5SMC30A | ERJ | 28.5 | 31.5 | 1.0 | 25.6 | 5.0 | 38 | 41.4 | 0.097 |
| 1.5SMC33 | ESJ | 29.7 | 36.3 | 1.0 | 26.8 | 5.0 | 33 | 47.7 | 0.098 |
| 1.5SMC33A | ETJ | 31.4 | 34.7 | 1.0 | 28.2 | 5.0 | 34 | 45.7 | 0.098 |
| 1.5SMC36 | EUJ | 32.4 | 39.6 | 1.0 | 29.1 | 5.0 | 30 | 52.0 | 0.099 |
| 1.5SMC36A | EVJ | 34.2 | 37.8 | 1.0 | 30.8 | 5.0 | 31 | 49.9 | 0.099 |
| 1.5SMC39 | EWJ | 35.1 | 42.9 | 1.0 | 31.6 | 5.0 | 27 | 56.4 | 0.100 |
| 1.5SMC39A | EXJ | 37.1 | 41.0 | 1.0 | 33.3 | 5.0 | 29 | 53.9 | 0.100 |
| 1.5SMC43 | EYJ | 38.7 | 47.3 | 1.0 | 34.8 | 5.0 | 25 | 61.9 | 0.101 |
| 1.5SMC43A | EZJ | 40.9 | 45.2 | 1.0 | 36.8 | 5.0 | 26 | 59.3 | 0.101 |
| 1.5SMC47 | FDJ | 42.3 | 51.7 | 1.0 | 38.1 | 5.0 | 23 | 67.8 | 0.101 |
| 1.5SMC47A | FEJ | 44.7 | 49.4 | 1.0 | 40.2 | 5.0 | 24 | 64.8 | 0.101 |
| 1.5SMC51 | FFJ | 45.9 | 56.1 | 1.0 | 41.3 | 5.0 | 21 | 73.5 | 0.102 |
| 1.5SMC51A | FGJ | 48.5 | 53.6 | 1.0 | 43.6 | 5.0 | 22 | 70.1 | 0.102 |
| 1.5SMC56 | FHJ | 50.4 | 61.8 | 1.0 | 45.4 | 5.0 | 19 | 80.5 | 0.103 |
| 1.5SMC56A | FKJ | 53.2 | 58.8 | 1.0 | 47.8 | 5.0 | 20 | 77.0 | 0.103 |
| 1.5SMC62 | FLJ | 55.8 | 68.2 | 1.0 | 50.2 | 5.0 | 17 | 89.0 | 0.104 |
| 1.5SMC62A | FMJ | 58.9 | 65.1 | 1.0 | 53.0 | 5.0 | 18 | 85.0 | 0.104 |
| 1.5SMC68 | FNJ | 61.2 | 74.8 | 1.0 | 55.1 | 5.0 | 16 | 98.0 | 0.104 |
| 1.5SMC68A | FPJ | 64.6 | 71.4 | 1.0 | 58.1 | 5.0 | 17 | 92.0 | 0.104 |
| 1.5SMC75 | FQJ | 67.5 | 82.5 | 1.0 | 60.7 | 5.0 | 14 | 108.0 | 0.105 |
| 1.5SMC75A | FRJ | 71.3 | 78.8 | 1.0 | 64.1 | 5.0 | 15 | 103.0 | 0.105 |
| 1.5SMC82 | FSJ | 73.8 | 90.2 | 1.0 | 66.4 | 5.0 | 13 | 118.0 | 0.105 |
| 1.5SMC82A | FTJ | 77.9 | 86.1 | 1.0 | 70.1 | 5.0 | 13.9 | 113.0 | 0.105 |
| 1.5SMC91 | FUJ | 81.9 | 100.0 | 1.0 | 73.7 | 5.0 | 12 | 131.0 | 0.106 |
| 1.5SMC91A | FVJ | 86.5 | 95.50 | 1.0 | 77.8 | 5.0 | 12.6 | 125.0 | 0.106 |

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

| GENERAL PART NUMBER | Device Marking Code | Breakdown Voltage | | | Stand-Off Voltage V _{WM} (Volts) | Maximum Reverse Leakage at V _{WM} I _D (uA) | Maximum Peak Surge Current I _{PPM} (Note 2)(Amps) | Maximum Clamping Voltage at I _{PPM} V _C (volts) | Maximum Temperature Coefficient of V _{BR} (% / °C) |
|---------------------|---------------------|----------------------------------|-------|-----------------------------------|---|--|--|---|---|
| | | V _{BR} (Volts) (Note 1) | | Test Current @I _T (mA) | | | | | |
| | | Min | Max | | | | | | |
| 1.5SMC100 | FWJ | 90.0 | 110.0 | 1.0 | 81.0 | 5.0 | 10.9 | 144.0 | 0.106 |
| 1.5SMC100A | FXJ | 95.0 | 105.0 | 1.0 | 85.5 | 5.0 | 11.4 | 137.0 | 0.106 |
| 1.5SMC110 | FYJ | 99.0 | 121.0 | 1.0 | 89.2 | 5.0 | 9.9 | 158.0 | 0.107 |
| 1.5SMC110A | FZJ | 105.0 | 116.0 | 1.0 | 94.0 | 5.0 | 10.3 | 152.0 | 0.107 |
| 1.5SMC120 | GDJ | 108.0 | 132.0 | 1.0 | 97.2 | 5.0 | 9.1 | 173.0 | 0.107 |
| 1.5SMC120A | GEJ | 114.0 | 126.0 | 1.0 | 102.0 | 5.0 | 9.5 | 165.0 | 0.107 |
| 1.5SMC130 | GFJ | 117.0 | 143.0 | 1.0 | 106.0 | 5.0 | 8.4 | 187.0 | 0.107 |
| 1.5SMC130A | GGJ | 124.0 | 137.0 | 1.0 | 111.0 | 5.0 | 8.7 | 179.0 | 0.107 |
| 1.5SMC150 | GHJ | 135.0 | 165.0 | 1.0 | 121.0 | 5.0 | 7.3 | 215.0 | 0.108 |
| 1.5SMC150A | GKJ | 143.0 | 158.0 | 1.0 | 128.0 | 5.0 | 7.6 | 207.0 | 0.108 |
| 1.5SMC160 | GLJ | 144.0 | 176.0 | 1.0 | 130.0 | 5.0 | 6.8 | 230.0 | 0.108 |
| 1.5SMC160A | GMJ | 152.0 | 168.0 | 1.0 | 136.0 | 5.0 | 7.1 | 219.0 | 0.108 |
| 1.5SMC170 | GNJ | 153.0 | 187.0 | 1.0 | 138.0 | 5.0 | 6.4 | 244.0 | 0.108 |
| 1.5SMC170A | GPJ | 162.0 | 179.0 | 1.0 | 145.0 | 5.0 | 6.7 | 234.0 | 0.108 |
| 1.5SMC180 | GQJ | 162.0 | 198.0 | 1.0 | 146.0 | 5.0 | 6.1 | 258.0 | 0.108 |
| 1.5SMC180A | GRJ | 171.0 | 189.0 | 1.0 | 154.0 | 5.0 | 6.4 | 246.0 | 0.108 |
| 1.5SMC200 | GSJ | 180.0 | 220.0 | 1.0 | 162.0 | 5.0 | 5.4 | 287.0 | 0.108 |
| 1.5SMC200A | GTJ | 190.0 | 210.0 | 1.0 | 171.0 | 5.0 | 5.7 | 274.0 | 0.108 |

Notes:

1. V_{BR} measured after I_T applied for 300us, I_T=square wave pulse or equivalent.
2. Surge current waveform per Figure 3 and derate per Figure 2.
3. For bipolar types having V_{WM} of 10 volts and under, the I_D limit is doubled.
4. For bidirectional use C or Ca suffix for types 1.5SMC 6.8 through 1.5SMC200A.
5. All terms and symbols are consistent with ANSI/IEEE C62.35.

RATINGS AND CHARACTERISTIC CURVES (1.5SMC SERIES)

FIG.1- PEAK PULSE POWER RATING CURVE

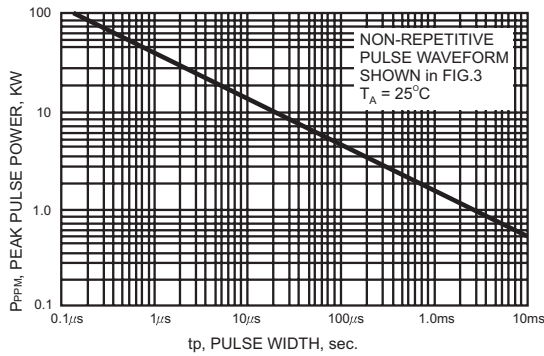


FIG.2- PULSE DERATING CURVE

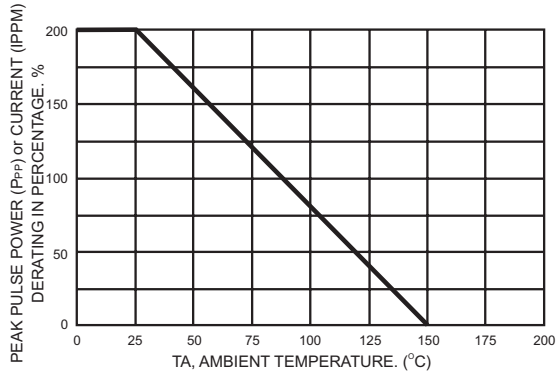


FIG.3- PULSE WAVEFORM

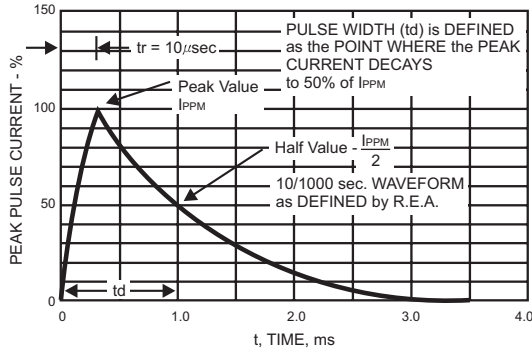


FIG.4- TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

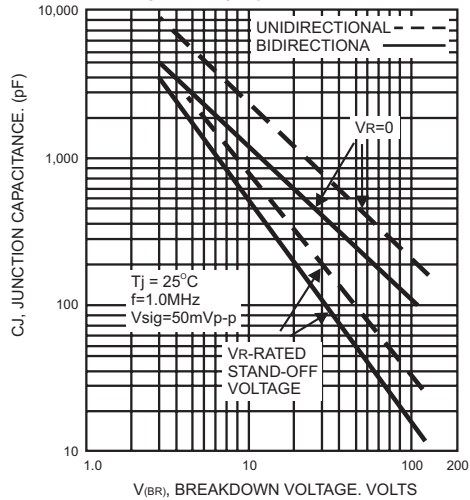


FIG.5- MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY

